

5. Gerster, J.: Diverticula of the jejunum, *Ann. Surg.*, 107:783, May 1938.
6. Gordinier, H. C., and Sampson, J. A.: Diverticulitis (not Meckel's) causing intestinal obstruction, *J.A.M.A.*, 46:1585, May 26, 1906.
7. Guthrie, D., and Hughes, F. A.: Diverticulosis of the small intestine, *Surgery*, 1:595, April 1937.
8. Jones, C. M.: Gastroenterology. Review of literature from July 1939 to July 1940, *Arch Int. Med.*, 66:893, Oct. 1940.
9. Kozoll, D. D., McMahon, J. A., and Kiely, J. P.: Massive gastrointestinal hemorrhage due to jejunal diverticula, *J.A.M.A.*, 142:1258, April 22, 1950.
10. Mahorner, H., and Kisner, W.: Diverticula of the duodenum and jejunum, *Surg., Gyn. & Obst.*, 85:607, Nov. 1947.
11. Ovens, G. H. C.: Acute diverticulitis of the jejunum, *Brit. J. Surg.*, 30:239, Jan. 1943.
12. Rankin, F. W., and Martin, W. J., Jr.: Diverticula of the small bowel, *Ann. Surg.*, 100:1123, Dec. 1934.
13. Ratcliffe, J. W., Bartlett, M. K., and Halstead, J. A.: Diverticulosis and acute diverticulitis of the jejunum, *N.E.J.M.*, 242:387, Mar. 16, 1950.
14. Watson, C. M.: Diverticula of jejunum; a case with enterolith causing intestinal obstruction, *Surg., Gyn. & Obst.*, 38:67, Jan. 1924.
15. Wilkerson, J. H., and Coffman, R.: Multiple diverticula of the jejunum, *Am. J. Surg.*, 75:733, May 1948.

Diaphragmatic Hernia Simulating Hydropneumothorax

C. L. BOICE, M.D., Redwood City

ALTHOUGH protrusion of the stomach and colon into the thoracic cavity, closely simulating hydropneumothorax in roentgenographic appearance, is quite unusual, the medical literature is replete with descriptions of the diagnostic and therapeutic aspects of herniations of portions of the gastrointestinal tract into the thorax. Certainly little can be added to the roentgenological knowledge of this abnormality, except to better delineate the various types of hernias preoperatively. In that regard the case here reported presents some unusual aspects which warrant recording. The roentgenographic appearance of the chest was so typical of hydropneumothorax that thoracentesis was done, in an effort to relieve the symptoms, before the correct diagnosis was established.

CLINICAL HISTORY

A white woman 45 years of age was admitted to the Palo Alto Hospital with severe respiratory distress, marked by cyanosis, dyspnea and pain in the left side of the chest. The patient was nauseated and had vomited repeatedly during the several hours preceding admittance. The symptoms had begun about 36 hours previously and had gradually increased in severity. The patient was admitted directly to the x-ray department of the hospital with a request for roentgen examination of the chest and abdomen. The referring physician was aware that a diaphrag-

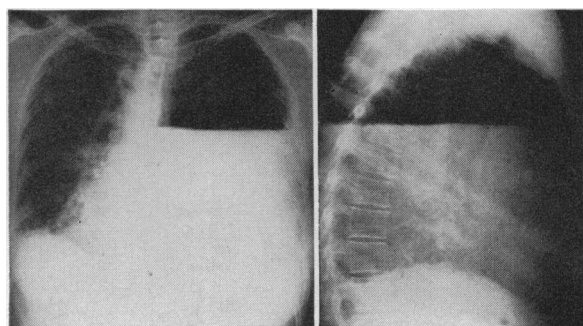


Figure 1.—Chest films before intubation, showing gas and fluid-filled stomach filling left side of chest.

matic hernia had been demonstrated several years previously, but this information was not immediately available to the roentgenologist. Films of the chest (Figure 1) were made. It was the opinion of the roentgenologist that there was extensive hydropneumothorax on the left. As the patient was in severe distress, paracentesis was carried out, but aspiration was immediately discontinued when it was noted that the fluid withdrawn bore strong resemblance to gastric contents. An x-ray film of the abdomen with the patient supine was made (Figure 2, A). There appeared to be very little gas in the intestines, and an area of increased density in the left side of the abdomen extended into the left side of the chest. The left hemidiaphragm could not be delineated. It was presumed that the stomach, grossly dilated and containing a large amount of fluid, was in the chest. The stomach was intubated, a few liters of gastric contents withdrawn, opaque material introduced. X-ray films then showed the stomach in the thoracic cavity (Figure 2, B and C). Subsequent studies showed portions of the transverse and descending colon in the chest also, with the splenic flexure at the level of the left first interspace (Figure 3).

At operation it was noted that the entire stomach and about four inches of duodenum were in the left side of the chest. A loop of colon lay anterior to the stomach, extending to the apex of the thoracic cavity. The lower lobe of the lung was entirely collapsed and there was only a small amount of air in the upper lobe. There were extensive defects at the mid-line of the diaphragm, one of them anterior to a normal esophageal hiatus, through which the colon passed, and another posterior through which the stomach and duodenum passed. There was no sac over the stomach or colon. The appearance suggested that injury had caused the displacement, but no history of significant trauma could be obtained. The stomach and colon were returned to the abdominal cavity and the defects in the diaphragm repaired. Both lobes of the lung reexpanded. The patient recovered without complications.

In subsequent roentgen studies of the gastrointestinal tract, the organs were in normal position, and no abnormality was evident, except that even one year later the stomach still emptied quite slowly.

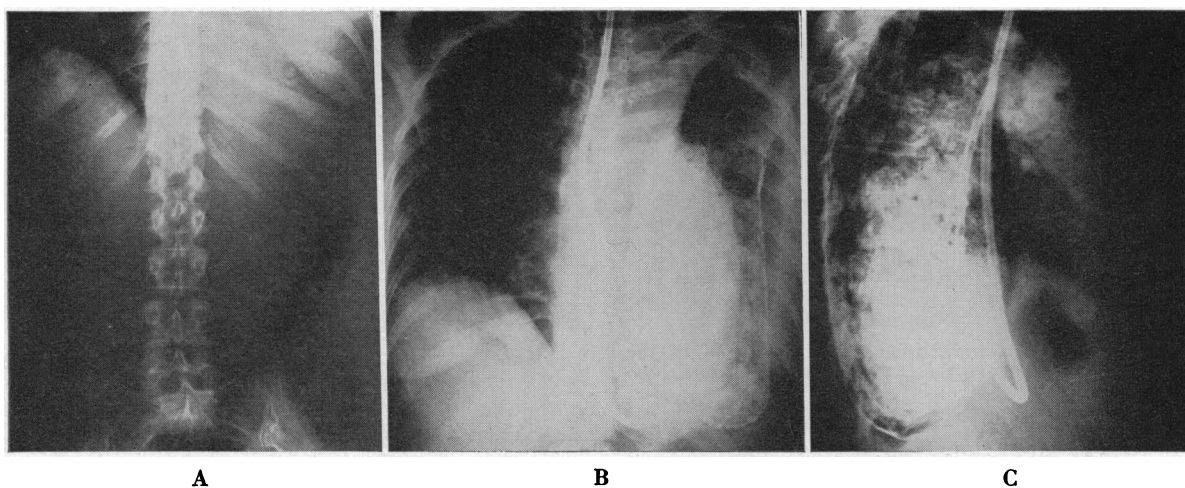


Figure 2.—*Left*, abdomen, showing left-sided density and nondelineation of left hemidiaphragm. *Center*, opaque material in partially deflated stomach. *Right*, opaque material in stomach, lateral projection.

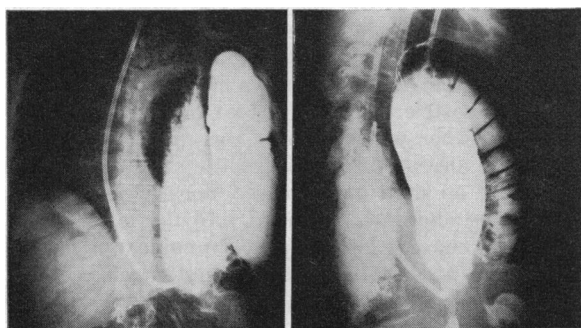


Figure 3.—Opaque material in colon, showing splenic flexure near apex of the thoracic cavity. Lateral view shows colon anterior. Tube and some barium remain in stomach posteriorly.

DISCUSSION

Recent excellent articles describe the roentgenological aspects of diaphragmatic hernia.^{1,2} So far as is known, however, the confusion between hernia and hydropneumothorax that was a factor in the case here reported has not previously been described. Yet, when the entire stomach is in the chest, this appearance is an ever-present possibility. In the present case, had a film of the abdomen been studied with the chest films, the possibility of herniation would certainly have been considered. Fortunately, no ill effects followed thoracentesis.

CONCLUSION

A case of herniation of stomach and colon into the chest, simulating hydropneumothorax, is reported. In this case, the erroneous interpretation could have been obviated by further investigation of the previous clinical history and by x-ray study of the abdomen at the time the films of the chest were studied.

3004 Broadway.

ACKNOWLEDGEMENT

The author is indebted to Dr. Blake C. Wilbur, Palo Alto, California, and Dr. Herbert A. Clattenburg, Redwood City, California, for the clinical information in this case.

REFERENCES

1. Carter, B. N., Giuseffi, J., and Felson, B.: Traumatic diaphragmatic hernia, *Am. J. Roentgen. and Rad. Ther.*, 65:56-72, Jan. 1951.
2. Isaac, F., Williams, F. B., and Weinberg, J.: Traumatic and related types of diaphragmatic hernia, *Radiology*, 55: 527-533, Oct. 1950.

Benign Diaphragmatic Tumor

D. J. BROBECK, M.D., Inglewood;
J. R. JOHNSON, M.D., Los Angeles;
J. H. FRANK, M.D., Inglewood, and
OSCAR HARVEY, M.D., Los Angeles

FEW REPORTS OF TUMORS of the diaphragm have been made. Scott and Morton⁸ in 1946 and Clagett and Johnson² in 1949 reviewed the literature and reported additional cases. The latter found reports of only 30 apparently authentic cases of primary tumor of the diaphragm, and they reported four additional cases. In 18 of the 34 cases the tumor was malignant and in 16 benign. In only seven of the cases in which the tumor was benign was it removed surgically; in the remainder it was noted at autopsy. Since the report by Clagett and Johnson, two cases of benign tumor and three of malignant tumor of the diaphragm have been reported.

The one herein reported is the nineteenth reported case of benign diaphragmatic tumor and the tenth in which the growth was surgically removed.

Diaphragmatic tumors may be asymptomatic and when symptoms do occur they are not pathognomonic. Pain in the chest is the most common symptom. The pain may be aggravated by deep breathing, and pain in the shoulder may occur. The pain may in part